DOCUMENT RESUME

ED 396 867 RC 019 992

TITLE	Math and Science. IDRA Focus.
INSTITUTION	Intercultural Development Research Association, San Antonio, Tex.
REPORT NO	ISSN-1069-5672
PUB DATE	Feb 95
NOTE	21p.; Photographs may not reproduce adequately.
PUB TYPE	Collected Works - Serials (022)
JOURNAL CIT	IDRA Newsletter; v22 n2 Feb 1995
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Educational Strategies; Elementary Secondary Education; Females; Hispanic Americans; Inservice Teacher Education; *Limited English Speaking; *Mathematics Education; Mathematics Instruction; *Minority Groups; *Parent Participation; Preschool Education; *Science Education; Science Instruction; Teaching Methods
IDENTIFIERS	*Content Area Teaching; Content Learning; Language Minorities

ABSTRACT

This theme issue contains six articles on improving math and science education for minority group students, particularly language-minority students. "Accelerating Content Area Gains for English Language Learners" (Laura Chris Green) describes the Young Scientists Acquiring English project, which seeks to improve the content-area achievement of inner-city middle school students who are acquiring English by providing inservice teacher training and technical assistance. "Teaching Content Subjects to LEP Students: 20 Tips for Teachers" (Frank Gonzales) focuses on simplification of language rather than content, experiential learning, use of manipulatives and all senses, cooperative learning, higher order thinking skills, explicit review of goals and instructions, and adaptations to classroom communication practices. "MIJA Girls Getting Excited about Math: Assessing the Outcomes of the MIJA Program" (Anna De Luna, Felix Montes) describes the Math Increases Job Aspirations program, which aims to improve the math knowledge, skills, and attitudes of Hispanic girls in grades 6-7 through innovative workshops for the girls and their parents, teachers, and counselors. "What Parents Can Do for Their Children's Mathematics Learning" (Ninta Adame-Reyna) outlines 12 tips to parents on improving their children's math attitudes and achievement. "Playtime Is Science Expands in Region VI" (Bradley Scott) describes expansion to Texas, Oklahoma, and Arkansas of a science activity program for young children and their parents. "Technology Uses for Math and Science Learning" (Felix Montes) lists some ideas for incorporating television, computers, multimedia computers, and the Internet into math and science learning. Lists 11 additional readings on math and science education. (SV)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

INTERCULTURAL DEVELOPMENT RESEARCH ASSOCIATION

IDRA Newsletter

IDRA FOCUS: MATH AND SCIENCE

ISSN 1069-5672 Volume XXII, No. 2 Feb. 1995

ED 396 867

IDRA is an independent nonprofit advocacy organization dedicated to improving educational opportunity. Through research, materials development, training, technical assistance, evaluation, and information dissemination, we're helping to create schools that work for all children.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
E. Garza
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

RC019992

ACCELERATING CONTENT AREA GAINS FOR ENGLISH LANGUAGE LEARNERS

Laura Chris Green, Ph.D.

The ability of any nation to compete successfully in a global market today depends on the scientific and mathematical literacy of its citizens. In the case of the United States, this literacy has been called into question by the poor showing of U.S. students in mathematics and science assessments in both national and international studies (Clewell, Anderson and Thorpe, 1992).

Unless U.S. students acquire scientific and mathematical literacy today they will become the "techno-peasants" of tomorrow. Of particular concern is the fact that we are doing a poor job of reaching minority, especially language minority, students. Math and science knowledge can open the doors of opportunity for thousands of students, providing them with exciting, well-paying and self-fulfilling careers. Lack of math and science knowledge, on the other hand, can relegate them to continuing cycles of poverty and despair.

The Intercultural Development Research Association (IDRA) has crafted a project called Young Scientists Acquiring English (YSAE) to counter this trend. The goal of this Title VII project is to accelerate the content area achievement of middle school students who are acquiring English (English language learners). A three-year teacher training program in three inner-city middle schools will be the vehicle for achieving this goal. This article will provide the rationale for the project, describe the training and technical assistance model being used and outline the content of the workshop sessions for the first year.

A Need for Teacher Professional Development

Major barriers to minority student achievement can be found in the area of teacher preparation and expectations. Shirley Malcom found that in schools with high minority representations, teachers are less trained, classrooms lack equipment, and courses lack rigor and relevance (Malcom et al., 1976). Gerald Maben surveyed teachers nationally and found that more than two-thirds of them perceived deficiencies in science content and science teaching methods (1980). Math and science are seen as higher-order disciplines, and teachers often see minority students as genetically or otherwise predisposed to low achievement and send messages that these disciplines are more suitable for White males (Beane, 1988).

Further, the instructional strategies used by most math and science teachers do not complement the learning styles of minority students (Gilligan, 1982). This contributes to minority students' low self-concepts for math and science achievement. Michael Coles and Peg Griffen found that minority students are exposed far less often to higher-order thinking activities than are their White peers (1987). Instead, minority students spend all or most of their instructional time in lower-order drill-and-practice activities.

An effective science program includes an emphasis on both content and process skills that help students learn how to learn. Comparisons of minority students in elementary activity-based programs to those in more static teacher/text-based programs showed substantial improvement in science

Accelerating Content - continued on page 7

IN THIS ISSUE

5 *MIJA Girls Excited About Math: Assessing Outcomes*

11 *What Parents Can Do for Their Children's Math*

13 *Playtime Is Science Expands in Region VI*

15 *Technology Uses for Math and Science Learning*

17 *Resources on Math and Science*

The Intercultural Development Research Association *(IDRA)* is a non-profit organization with a 501(c)(3) tax exempt status. The purpose of the organization is to disseminate information concerning equality of educational opportunity. The *IDRA Newsletter* (ISSN 1069-5672, copyright ©1995) serves as a vehicle for communication with educators, school board members, decision-makers, parents, and the general public concerning the educational needs of all children in Texas and across the United States.

Publication offices:
5835 Callaghan Road, Suite 350
San Antonio, Texas 78228-1190
Tel. 210/684-8180
Fax 210/684-5389

Maria Robledo Montecel, Ph.D.
IDRA Executive Director
Newsletter Executive Editor

Christie L. Goodman
IDRA Communications Manager
Newsletter Production Editor

Sarah H. Aleman
IDRA Graphics Specialist
Newsletter Typesetter

Permission to reproduce material contained herein is granted provided the article or item is reprinted in its entirety and proper credit is given to IDRA and the author. Please send a copy of the material in its reprinted form to the *IDRA Newsletter* production offices. Editorial submissions, news releases, subscription requests, and change-of-address data should be submitted in writing to the *Newsletter* Production Editor. The *IDRA Newsletter* staff welcomes your comments on editorial material.

Popularized in the early 1970s by author Thomas Kuhn, "paradigms" are our models or patterns of reality, shaped by our understanding and experience into a system of rules and assumptions about the world around us. The call for restructuring in education, emerging from a profound sense that education is not working for all children, requires a transformation in how we see schools, students, and their families. If we are to find a new and equitable vision of what education can and should be, new lenses are required to change the way we look at schools and the populations in them - as demonstrated by our "Now" thinkers below.

THAT IS THEN... THIS IS NOW...

"The most damaging blows to science and mathematics education have come from Washington. For the past 20 years, federal mandates have favored 'disadvantaged' pupils at the expense of those who have the highest potential to contribute positively to society...By catering to the demands of special interest groups – racial minorities, the handicapped, women and non-English speaking students – America's public schools have successfully competed for government funds, but they have done so at the expense of education as a whole."

- E. Gardner, *Heritage Today*, 1983. Quoted in *Facing Racism in Education*

"A woman ... cannot afford to risk her health in acquiring knowledge of the advance sciences, mathematics, or philosophy for which she has no use ... Too many women have already made themselves permanent invalids by overstrain of study at schools and colleges."

- editorial in a college newspaper in late 1880s. Quoted in *Failing at Fairness: How America's Schools Cheat Girls* by Myron and David Sadker, 1994

"Stand firm in your refusal to remain conscious during algebra. In real life, I assure you, there is no such thing as algebra."

- Fran Lebowitz, journalist, quoted in *The Concise Columbia Dictionary of Quotations*, 1990

"Having spent most of my teaching career in Birmingham primary schools with a very high proportion of bilingual children, I have become convinced that science is one of the most effective ways of developing the children's command of English, and promoting their self-esteem by taking advantage of the practical nature of science and by using the cultural heritage that bilingualism implies."

- Tina Jarvis, "Science and Bilingual Children: Realizing the Opportunities," *Education*, March 13, 1991

"Despite rising concerns about the mathematics and science achievement of U.S. students, a flood of evidence amassed over the past decade suggests that far too few of them are receiving the high-quality education needed in these subjects either for careers or for basic citizenship."

- Association for Supervision and Curriculum Development, "Raising Our Sights." Quoted in ASCD's *Update*, December 1991

"By the year 2000, U.S. students will be first in the world in mathematics and science achievement."

- Fourth national goal for education, Education Summit sponsored by the nation's governors and President Bush. Quoted in ERIC Clearinghouse for Science, Mathematics, and Environmental Education, May 1991

TEACHING CONTENT SUBJECTS TO LEP STUDENTS:
20 TIPS FOR TEACHERS

Frank Gonzales, Ph.D.

A major goal of mathematics and science instruction is to develop students' ability to interpret and apply what they have learned. Traditional teaching methods have focused on providing students with discrete facts. However, real learning requires the ability to understand, not just repeat or regurgitate course material. Thus, instructional techniques must stress the development of thinking skills as well as the acquisition of information in math and science.

The traditional way of teaching science and mathematics has been the lecture and discussion method, where teachers "tell" students what they are to learn and "ask" students questions over what they have been told. This approach limits the learning experience for all students, limited-English-proficient (LEP) as well as those who are proficient in English, for it gives them very little opportunity to discuss the content or topic, to solve problems, to ask their own questions or to develop thinking skills related to the subject matter on which they are required to take standardized tests in order to graduate. The traditional method is even less effective with LEP students since it is dependent upon students' understanding the lecture in English. LEP students are often required to understand oral word problems or scientific explanations without concrete referents, to understand demonstrations and to follow directions in English through the lecture method.

Mathematics and science content taught to LEP students should be the same as content taught to other students. Science comprises the descriptions developed over time to explain how and why the environment operates as it does. Mathematics comprises the use of numbers and their operations. These understandings are universal, not more or less appropriate for members of certain cultures or races. In addition, universal access to advanced science and mathematics is necessary to ensure equitable access to professional career opportunities.

Mathematics and science instruction is most effective when the content is organized around common themes (Stutman and Guzman, 1993). The themes can be broad science concepts such as the nature of matter or magnetic energy, or they can be societal issues such as the pollution and purification of water or the impact of drugs on the physiology and behavior of living organisms. Mathematics themes can be as simple as determining the area within a classroom or determining the inter-relationship of distance between the planets. Using themes puts knowledge in a comprehensible context with relevance to students' lives, which increases the probability that students will continue to want to learn about mathematics and science on their own.

Research and experience have demonstrated that the classroom organization

Teaching Content *- continued on page 4*

WHAT IS YOUR IMMEDIATE RESPONSE TO THE FOLLOWING STATEMENTS?

1. Limited-English-proficient (LEP) students should not begin to study the more language intensive content areas such as science and mathematics until they have developed basic English proficiency. **True or False**
2. The classroom teacher should avoid asking LEP students questions that require higher order thinking skills until they reach a proficiency level close to or equal to that of their English-speaking classmates. **True or False**
3. LEP students who enter schools in the United States should be able to participate successfully in mainstream content classes within three years. **True or False**
4. Schools should discourage LEP students from using their home language in the content area classes because this will delay their progress in developing English skills. **True or False**

THESE ARE ISSUES THAT EDUCATORS HAVE BEEN FACING FOR YEARS. CHECK YOUR RESPONSES WITH WHAT RESEARCH VERIFIES.

1. **False**. Language learning should not be separated from content area learning. Studies show that language minority students can develop language skills while acquiring the concepts and academic skills needed for success in content area subjects (Lambert and Tucker, 1972). Postponing content instruction results in underachievement and dropping out (Short, 1991).
2. **False**. Emphasis should be placed on developing higher order thinking skills throughout the instructional program for language-minority students (Chamot and O'Malley, 1994).
3. **False**. Research shows that it generally takes language-minority students five to seven years to develop the academic language needed for academic success in an all-English classroom (Cummins, 1981; Collier, 1989).
4. **False**. Students should be encouraged to use their home language to help them understand the subject matter whenever possible. Not allowing students to use their first language inhibits them and may cause negative feelings about themselves and their culture (Lee, 1993).

Teaching Content - continued from page 3

strategy most effective for teaching content to LEP students is cooperative learning because it fosters language development through inter-student communication (Kagan, 1990). In a cooperative task, LEP students can develop listening, speaking, reading and writing skills as they learn the information of the tasks.

Effective teaching research tells us that students learn better when they do something. Active learning provides higher student achievement than does passive learning. In a discovery environment, students have the opportunity to find the answers to the questions they themselves pose about a topic. They develop their English language skills as they articulate the problems they have devised, and they learn to learn on their own. Students should also be given ample opportunities to test their own ideas. Ideally, teachers should provide a variety of resources to support students' discovery activities: materials for science laboratory investigations; reference books, newspapers and magazines; access to libraries for additional materials; classroom visits from specialists in the community; field trips; films; and computer programs.

The inquiry and discovery method of content teaching is like the "whole or natural language" approach to teaching a new language. Whole language instruction de-emphasizes pure memorization of language and stresses, instead, language skill development and comprehension through use of the language in a real world setting.

Classroom teachers can help language minority students comprehend content subject matter as they acquire English language skills by practicing the following suggestions compiled based on existing research and IDRA's experience with schools.

1. **Increase your own knowledge**. Learn as much as you can about the language and culture of your students. Go to movies and read books. Keep the similarities and differences in mind and then check your knowledge by asking your students whether or not they agree with your impressions. Learn as much of the student's language as you can; even a few words help. Widen your own world view; think of alternative ways to reach the goals you have for your class.
2. **Simplify your language not the content or questions**. Speak directly to the student, emphasizing important nouns and verbs. Use as few extra words as possible. Repetition and speaking louder does not help; rephrasing, accompanied by body language, does. Avoid slang and idiomatic expressions.
3. **Announce the lesson's objectives and activities**. Write the objectives on the board and review them orally before class begins. It is also helpful to place the lesson in the context of its broader theme and preview upcoming lessons.
4. **Write legibly**. This is good for everyone. Remember that some students have low levels of literacy or are unaccustomed to the Roman alphabet. Use the chalkboard or overhead projector to write important words.
5. **Demonstrate; use manipulatives**. Whenever possible, accompany your message with gestures, pictures and objects that help get the meaning across. Use a variety of different pictures or objects for the same idea. Give an immediate context for new words.
6. **Make use of all senses**. Give students a chance to touch things, to listen to sounds, even to smell and taste when possible. Talk about the words that describe these senses as the students physically experience something. Write new words as well as say them.
7. **Use filmstrips, films, videotapes and audio cassettes with books**. Obtain audio-visual materials from the school or district media center to improve a content lesson. It is helpful to preview the audio-visual materials before showing them to the class, both for possible language difficulties and misleading cultural information.
8. **Bring realia into the lessons**. Use visual displays (graphs, charts, photographs), objects and authentic materials, like newspaper and magazine clippings, in the lessons and assignments. These help provide non-verbal information and also help match various learning styles.
9. **Adapt the materials**. Don't "water down" the content. Rather, make the concepts more accessible and comprehensible by adding pictures, charts, maps, time-lines and diagrams in addition to simplifying the language.
10. **Pair or group language minority students with native speakers**. Much of a student's language learning comes from interacting with his or her peers. Give your students tasks to complete that require interaction of each member of the group. Utilize cooperative learning techniques in a student-centered classroom.
11. **Develop a student-centered approach**

Teaching Content - continued on page 9

DID YOU KNOW?

Between 1977 and 1990, the number of Hispanics who received college degrees in the sciences, compared with other racial ethnic groups, dropped significantly and continuously.

While African Americans and Hispanics constitute 10 percent and 7 percent of the total professional workforce, respectively, the representation of each group in the scientific workforce is only 2 percent.

– *ERIC Clearinghouse on Urban Education, Number 87, March 1993*

Out of all engineers, 2.6 percent are Hispanic and 3.8 percent are African American.

– Playtime Is Science, *A Program of Educational Equity Concepts Inc., New York, 1990*

Spotlight on Assessment

Like other children, students whose first language is other than English bring a wealth of knowledge and experience to school. But historically, standardized tests have provided little or no useful information about these students' language or cognitive abilities. The use of assessment and testing data has too often been limited to holding students accountable, offering little or no help to guide improvement efforts or foster collective accountability. IDRA works with all parties that have a vested interest in the educational outcomes produced by the schools – the students, the educational practitioners, the families and the broader community – to use data to frame solutions, monitor progress *and* hold all of the participants involved in the educational process accountable for the end results. IDRA is helping schools find solutions to traditional methods of testing and assessment, enabling students from diverse backgrounds to become empowered learners.

MIJA Girls Getting Excited about Math:

Assessing the Outcomes of the MIJA Program

Anna De Luna and Felix Montes, Ph.D.

For far too long, the assessment of students' achievement has placed more emphasis on efficient and economic administration than on the significance of what is measured or its contribution to students' learning. Assessment in mathematics is no exception. But in 1993, the Mathematical Sciences Education Board (MSEB) outlined three broad educational principles for mathematics assessment stressing content, learning and equity (Bass, 1993).

The content principle: Assessment should reflect the mathematics that is most important for students to learn. Currently, most math assessment instruments are comprised of multiple-choice questions, are focused on routine tasks and are limited in available time for solution. MSEB chair Hyman Bass elaborated, "Students must acquire the capabilities to cope with open-ended problems, to analyze and interpret data, to construct and communicate substantial webs of reasoning to formulate questions and conjectures, and to carry out extended projects both alone and in groups" (1993).

The learning principle: Assessment should support good instructional practice and enhance mathematics learning. Through assessment tasks that resemble learning tasks, students can construct their own mathematics knowledge. The results of mathematics assessment should provide information that can be used to aide this construction.

The equity principle: Assessment should support every student's opportunity to learn important mathematics. Thus, assessments must be used to determine what students have learned not to filter students out of educational opportunity. Bass emphasized, "The benefits of reform must effectively reach those populations — women and minorities — that represent the greatest infusion into the workforce and for whom education in mathematics and science has historically been least successful" (1993).

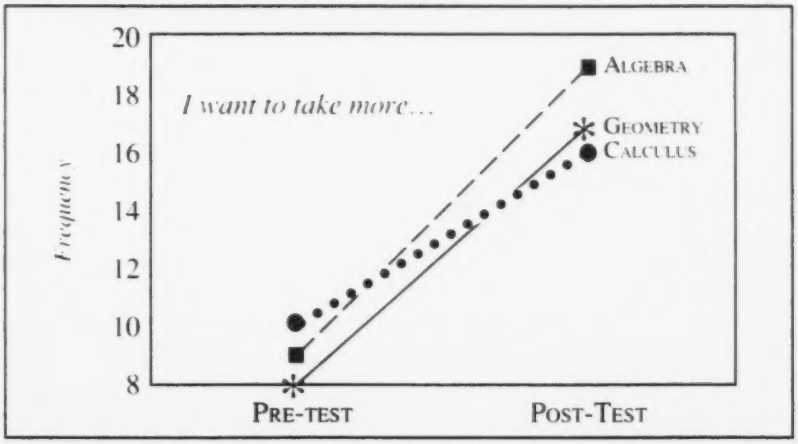
Prior to the outlining of these goals but with similar concerns in mind, IDRA initiated in 1990 a program for Hispanic girls in the sixth and seventh grades to radically change their relationships with mathematics. The Math Increases Job Aspirations (MIJA) program includes curricular, instructional, training and support components. It provides training to teachers, counselors and administrators about different approaches to mathematics suitable for girls, about gender equity and about school achievement. Parents participate in training and other activities that elicit in them a new understanding of the importance of mathematics and how to support their girls' mathematics achievement. Girls participate in innovative workshops and activities that are designed — and have been shown — to foster the same content skills outlined by MSEB. Through role modeling, meaningful direct instruction, participation in math and science conferences, and visits to places where men and women use mathematics as part of their daily activities, girls begin to redefine their relationships with mathematics. (For more information about the program see Sosa and García, 1992, and De Luna, 1993.)

Changing Perceptions

To measure the degree to which the program has been effective in changing these relationships, IDRA administered a perception survey to the girls before and after their participation in the program. The results are divided into three groups, representing the

MIJA - continued on page 6

MIJA Increased Girl's Inclination for Taking More Math Classes



Source: MIJA Evaluation Report – Year 2 – 1993-1994, Intercultural Development Research Association, November 1994.

MIJA - continued from page 5

three main relationships that define the girls' self-concept in mathematics (see graph below). The MIJA girls significantly changed their mathematics relationships with their parents, their teachers and themselves. After their participation in the program, the girls felt that their parents and their teachers had a better appreciation of their abilities and potential in mathematics. The girls had a significantly better self-efficacy in mathematics. Before participating in the program, only one out of the 10 girls (10%) questioned for the pre-test agreed with the statement, "When I don't do well in math, it is because I don't try hard enough." After participation, all 19 (100%) of the girls questioned for the post-test agreed with the statement. A similar pattern occurred with the statement, "I can do well in math if I have a lot of help."

The participants also had a significant change in their perceptions. All the students reported that they liked working with computers. They expressed an intention of taking geometry (85%) calculus (80%) and algebra (95%) classes (see graph on Page 5). The girls' self-esteem also rose. At the end of the program, 95 percent felt they could do well in mathematics if they had help, compared to 45.5 percent in the beginning of the program.

Activities and Measures of Success

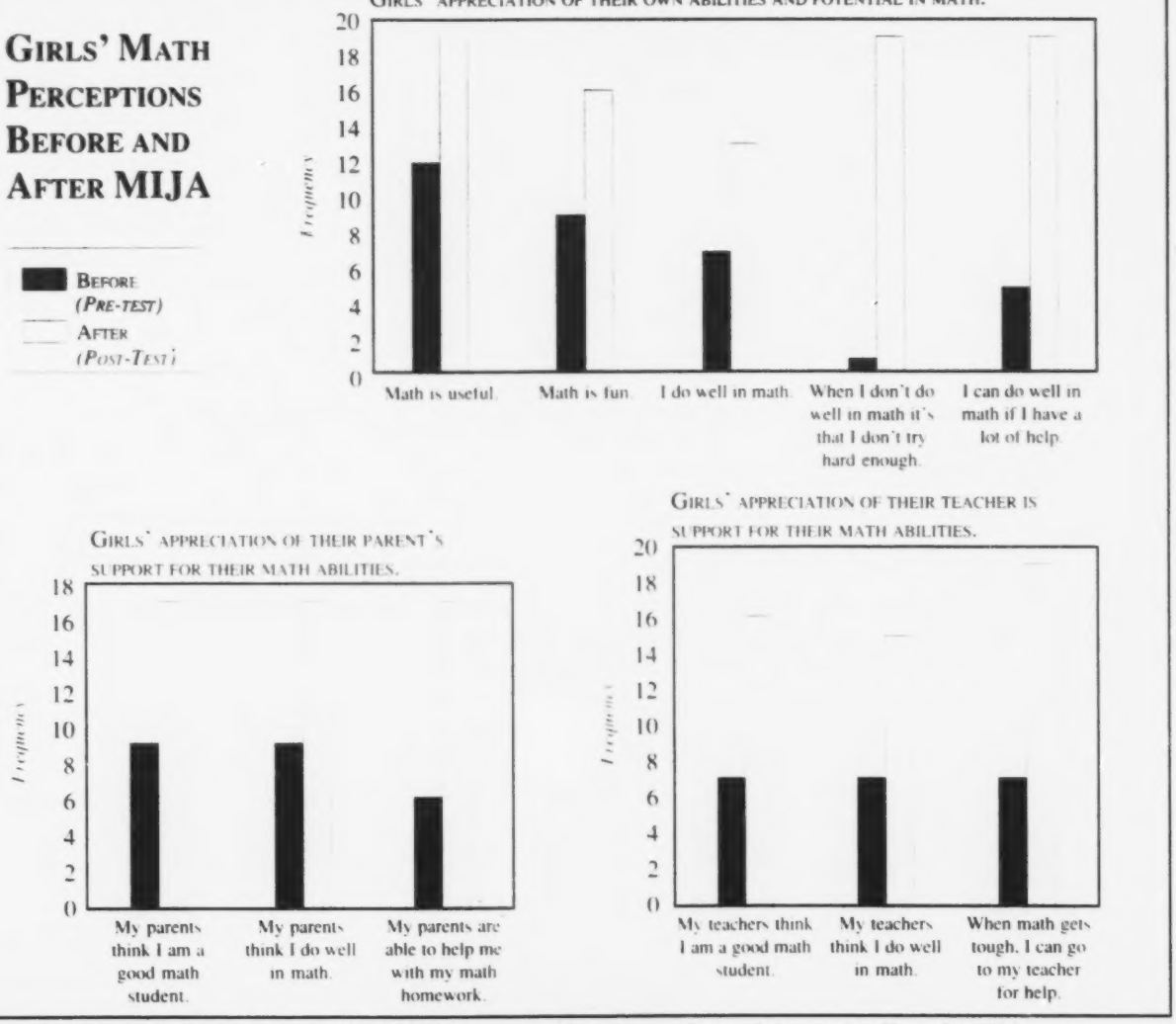
While accomplishing these changes in perceptions the MIJA program has also proven to be effective in accomplishing its basic goals. Below is a brief overview of the 1993-1994 school year assessment of the program implementation at two middle schools in San Antonio, Texas.

Increasing Math Skills

Goal 1: To increase the knowledge and skills of Hispanic sixth grade girls in mathematics. A series of innovative math activities were implemented during the monthly math sessions. The girls worked in the style of cooperative learning on activities such as estimation, probability, graphing, using geometric concepts in architecture and gem design, spacial visualization, consumer math and algebra, just to name a few. The program is designed to help girls who reported having trouble with their math courses. At the two schools, 28 percent and 51 percent of all girls passed the math portion of the Texas Assessment of Academic Skills (TAAS) test while, overall, more than

***MIJA** - continued on page 14*

GIRLS' MATH PERCEPTIONS BEFORE AND AFTER MIJA



Source: MIJA Evaluation Report – Year 2 – 1993-1994, Intercultural Development Research Association, November 1994.

Accelerating Content - continued from page 1

process skills, science content, creativity, perception, logic, language development, math concepts and attitudes toward science for the active children (Bredderman, 1982). Economically and educationally disadvantaged students showed the highest gains.

For English language learners, mismatches between the language of the classroom and that of these students can hamper math and science achievement. L. Smith, in writing about Navajo students, suggested that the style of a language influences the student's approach to learning and applying mathematical concepts (1981). If the student has a culture or language that differs from the mainstream culture, linguistic bias in the classroom seems inevitable.

Several studies have shown that Spanish-speaking elementary children taught bilingually score higher on mathematics assessments than those taught only in English (Coffland and Cuevas, 1979; De Avila and Duncan, 1979). Imelda Rodriguez and Lorrell Bethel (1983) found that an English as a second language (ESL)/inquiry approach to the teaching of science improved the oral communication and classification skills of bilingual third graders, reinforcing Bredderman's findings regarding the efficacy of activity-based science programs.

At the secondary level, English language learners who are newcomers to the United States usually spend an hour or two daily in special ESL classes learning to speak, read and write English. The rest of the day they spend in regular English-speaking classrooms where they must struggle with new concepts and content at the same time they struggle with linguistic barriers. This process can consume instructional time and contribute to a lowered self-concept for these students.

English language learners who have been in the United States awhile (about two or more years) usually are mainstreamed into regular classrooms for all periods of their instructional day. Although linguistic barriers tend to be fewer for them than for newcomers, many still lack the academic language and literacy skills necessary for functioning in typical secondary content area classrooms. Because they have basic oral proficiency, their teachers are often unaware that linguistic factors can negatively affect their content area achievement.

As a result of this mainstreaming of English language learners, all secondary teachers – not just ESL teachers – usually have language minority students in their classrooms, but they rarely receive the specialized training that can help them meet the special needs of their students. Many of these often committed and competent teachers feel they must choose between "watering down" their curriculum or leaving their English language learners behind as they move ahead conceptually with the rest of their students.

The IDRA Young Scientists Acquiring English project is designed to help content area teachers maintain high expectations for the cognitive achievements of all their students as they simultaneously learn to make challenging subject matter comprehensible and accessible to all.

Project Design

The teachers in the YSAE project are math, science, social studies, reading, English and ESL teachers at the middle school level. All are assigned to an academic team except for the ESL teachers who serve all beginner-level English language learners on their campuses. Most of the teachers cannot speak a language other than English, and have never had ESL training of any kind. The ESL teachers are currently implementing traditional ESL language programs rather than content-based ESL programs.

Six workshop days will be supplemented by 30 days of technical assistance per year. Each workshop day is followed by one or two days per campus of on-site observations or demonstration lessons. The demonstration lessons are performed by IDRA consultants in project classrooms and are based on methods and techniques that have been modeled in the previous workshops. The consultants and the teachers meet later that same day for a "debriefing," an opportunity for the teachers to ask questions and discuss how they can follow-up with future lessons on their own. The observations will occur later in the spring when teachers feel ready to demonstrate the project's methods and techniques for the IDRA consultants and/or other teachers. These observations will be followed with individual coaching sessions in which the consultants can give the teacher feedback on his or her performance.

Technical assistance will also be provided by facilitating the work of a task force on each campus that will examine all aspects of the school, identify the organizational changes needed to achieve the project objectives, and restructure the school accordingly. The task forces will be guided by the project vision statement created by the project teachers at the first workshop (see box at below).

A five-day summer institute will be used for the development of interdisciplinary units. Teams of teachers will choose the topic of their units and use the lesson planning tools, instructional techniques and assessment methods they have learned during the previous workshops for the creation of their units. The units will then be used for instruction during the second year of the project, refined and revised for inclusion in a project curriculum guide.

Accelerating Content - continued on page 8

Young Scientists Acquiring English: Vision Statement

The Young Scientists Acquiring English Title VII project is a process for student mastery of challenging subject matter in science, math, reading, English and social studies...

That...

- Increases staff expertise regarding instructional strategies that foster cognitive and linguistic development;
- Supports the learning styles and cultures of all students through cooperative learning and appreciation for diversity;
- Helps students make connections through the integration of the curriculum within and across disciplines;
- Improves school-wide communication horizontally and vertically through effective academic teams;
- Provides teachers with easy access to high-quality books, supplies, equipment and instructional technology;
- Aligns curriculum and assessment such that learning is authentically documented; and
- Increases the support of parents and the business and general school community...

So that...

All students, including English language learners, will experience success in critical thinking, problem solving and communication skills across the curriculum.

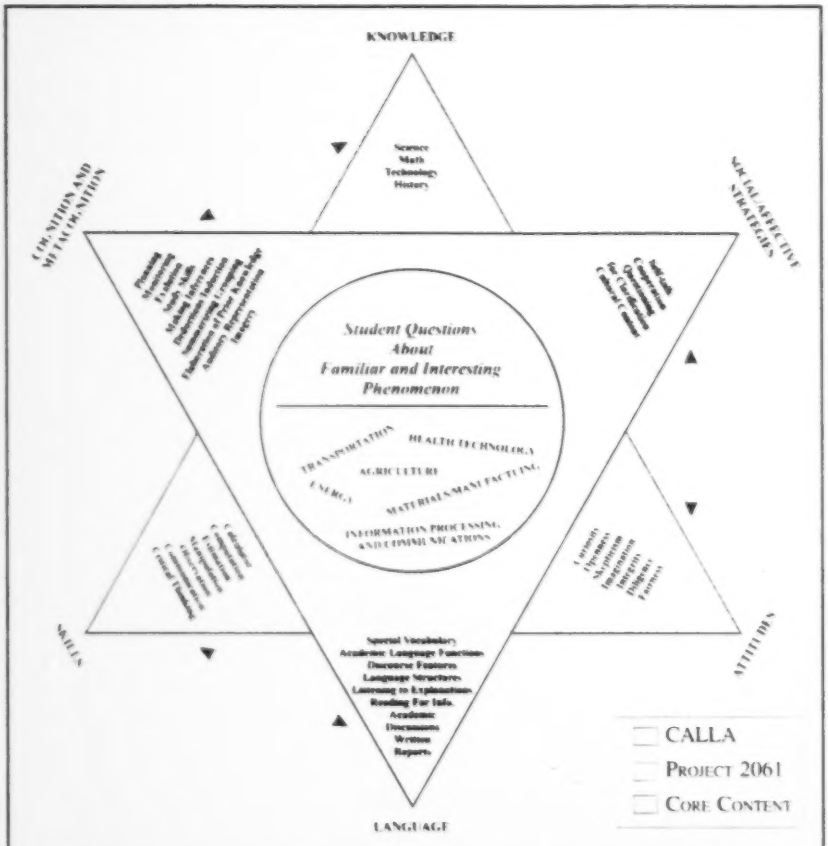
Accelerating Content - continued from page 7

Workshop Content

An analysis of the literature on recommended teaching practices for all subject areas indicates that practitioners and theorists alike advocate constructivist, learner-centered models of teaching and learning. Common themes are: active hands-on learning, higher order thinking, integration of the curriculum and depth versus breadth of coverage.

The Cognitive Academic Language Learning Approach (CALLA) to ESL developed by Anna Chamot and Michael O'Malley was chosen to serve as the basic ESL model for the project (1994). The Project 2061 approach to science education was chosen for the science half of the equation (AAAS, 1993). The figure below provides a merged model for both CALLA and Project 2061 that is being used to design the training workshops and the lessons taught to students. Other sources of inspiration from the professional literature include Spencer Kagan's *Cooperative Learning* (1992), Robin Fogarty's and Heidi Hayes Jacobs' models for curriculum integration (1991; 1989), and models from various reading researchers such as reciprocal teaching (Palincsar and Brown, 1984), question and answer relationships (Raphael, 1986), semantic feature analysis (Johnson and Pearson, 1984), and effective cognitive strategies for language minority students (Padrón, 1992).

IDRA Training Model Merging Approaches to ESL and Science Education



This model merges the Cognitive Academic Language Learning Approach (CALLA) to ESL (Chamot & O'Malley, 1994) with the Project 2061 approach to science education (AAAS, 1993).

Resources

American Association for the Advancement of Science. *Benchmarks for Science Literacy* (N.Y.: Oxford University Press, 1993).

Beane, D.B. *Mathematics and Science: Critical Filters for the Future of Minority Students.* (Washington, D.C.: The Mid-Atlantic Equity Center, The American University, 1988).

Bredderman, T. "What Research Says: Activity Science - The Evidence Shows it Matters," *Science and Children* (1982), 1, pp. 39-41.

Cárdenas, José A. "Science and Math Equity in the Schools," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, March 1991) pp. 1-6.

Chamot, A.U. and J.M. O'Malley. *The CALLA Handbook: Implementing the Cognitive Academic Language Learning Approach*, (Reading, Mass.: Addison-Wesley Publishing, 1994).

Clewell, B.C., Anderson, B.T., and M.E. Thorpe. *Breaking the Barriers: Helping Female and Minority Students Succeed In Mathematics and Science* (San Francisco, Calif.: Jossey-Bass Publisher, 1992), p. XI.

Coffland, J. and G. Cuevas. *Children's Learning of Numbers and Numerating Concepts: A Final Report*, NIE Contract No. 400-77-0074 (Bethesda, Md.: ERIC Document Reproduction Service, ED 198 199, 1979).

Coles, M. and P. Griffen (eds.). *Contextual Factors in Education: Improving Science and Mathematics Education for Minorities and Mathematics Education for Minorities and Women* (Madison, Wis.: Center for Education Research, 1987).

De Avila, E. and S. Duncan. *Predicting the Academic Success of Language Minority Students from Developmental, Cognitive Style, Linguistic and Teacher Perceptions Measures* (Austin, Texas: Southwest Educational Development Laboratory, 1979).

Fogarty, R. *How to Integrate the Curricula: The Mindful School* (Palatine, Ill.: Skylight Publishing, 1991).

Gilligan, C. *In a Different Voice: Psychological Theory and Women's Development*, (Cambridge, Mass.: Harvard University Press, 1982).

Jacobs, H. H. (ed.).(1989). *Interdisciplinary Curriculum: Design and Implementation* (Alexandria, Va.: Association for Supervision and Curriculum Development, 1989).

Johnson, D.D. and P.D. Pearson. *Teaching Reading Vocabulary, Second Edition* (N.Y.: Holt, Rinehart & Winston, 1984).

Kagan, S. *Cooperative Learning* (San Juan Capistrano, Calif.: Resources for Teachers, 1992).

Maben, G.W. "Is There Hope for School Science in 1980s," *The National Elementary Principal* (1980), 59, pp. 37-43.

Malcom, S., Hall, P., and J. Brown. *The Double Bind: The Price of Being a Minority Woman in Science*, Report No. 76-R-3 (Washington, D.C.: American Association for the Advancement of Science, 1976).

Padron, Y. N. "The Effect of Strategy Instruction on Bilingual Students' Cognitive Strategy Use in Reading," *Bilingual Research Journal* (1992), 16(3-4), pp. 35-51.

Palincsar, A.S. "Reciprocal Teaching of Comprehension Fostering and Comprehension Monitoring Activities," *Cognition and Instruction* (1984), 2, pp. 117-175.

Raphael, T. "Teaching Question Answer Relationships, Revisited," *The Reading Teacher* (1986), 39, pp. 516-522.

Rodriguez, I. and L. Bethel. "An Inquiry Approach to Science and Language Teaching," *Journal of Research in Science Teaching* (1983), 20, pp. 291-296.

Smith, L. *Mathematics Education in an American Indian Culture* (Tempe, Ariz.: Arizona State University, 1981).

Sosa, Alicia Salinas. "20 Years After Lau," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, January 1995) pp. 1, 19, 22-23.

Dr. Laura Chris Green is an Education Associate in the IDRA Division of Professional Development.

For more information about this innovative project, contact Dr. Chris Green, Project Director, at 210-684-8180.

COMING UP!

IDRA Newsletter focuses on gender equity in March.

Teaching Content - continued from page 4

to teaching and learning. Teachers need to become facilitators and let students assume more responsibility for their learning. When activities are planned that actively involve students, the students can better process the material presented and acquire the language as well.

12. **Have the students do hands-on activities**. Plan for students to manipulate new materials through hands-on activities, such as role play and simulations. This includes TPR (total physical response), laboratory experiments, drawing pictures and story sequences, and writing their own math word problems.
13. **List and review instructions step-by-step**. Before students begin an activity, teachers should familiarize them with the entire list of instructions. Then, teachers should have students work on each step individually before moving on to the next step. This procedure is ideal for teaching students to solve math and science word problems.
14. **Ask inferential and higher order thinking questions**. Encourage students' reasoning abilities, such as hypothesizing, inferring, analyzing, justifying, predicting. Language minority students possess higher order thinking skills.
15. **Build on the student's prior knowledge**. Find out as much as you can about how and what a student learned in his or her own country or cultural context. Then make a connection between the ideas and concepts you are teaching and the student's previous knowledge or previous way of being taught. Encourage the students to point out differences and connect similarities.
16. **Recognize that students will make language mistakes**. During the second language acquisition process, students make mistakes; this is natural in the process of learning a language. Make sure that the students have understood the information but do not emphasize the grammatical aspect of their responses. When possible, model the correct grammatical form.
17. **Increase wait time**. Give students time to think and process the information before you rush in with answers. A student may know the answer, but may need a little more processing time in order to say it in English.
18. **Do not force reticent students to speak**. Give the students an opportunity to demonstrate their comprehension and knowledge through body actions, drawing pictures, manipulating objects or pointing.
19. **Respond to the message**. If a student has the correct answer and you can understand it, do not correct his or her grammar. The exact word and correct grammatical response will develop with time, especially with young children. Instead, repeat his or her answer, putting it into standard English, and let the student know that you are pleased with his or her response.
20. **Support the student's home language and culture; bring it into the classroom**. Students can keep their home languages and learn English. Many children in this world grow up speaking more than one language; it is an advantage. Let students help bring about a multicultural perspective to the subjects you are teaching. Students can bring in pictures, poems, dances, proverbs or games. They can demonstrate a new way to do a math problems. Encourage students to this as a part of the subject you are teaching, not just as a separate activity. Do whatever you can to help your fluent English-speaking students see the language-minority student as a knowledgeable person from a respected culture.

LEP students can learn science, mathematics or any other content area subject as they develop their English proficiency. They can analyze, synthesize and make judgements about any topic they are taught when comprehensible instruction is provided. Classroom teachers who make their lessons comprehensible will become aware that *all* students can and do learn.

Resources

American Association for the Advancement of Science. *Stepping into the Future: Hispanics in Science and Engineering* (Washington, D.C.: AAAS, 1992).

Chamot, A.U. and J.M. O'Malley. *The CALLA Handbook: Implementing the Cognitive Academic Language Learning Approach* (Reading, Mass.: Addison-Wesley Publishing Co., 1994).

Collier, V. "How Long? A Synthesis of Research on Academic Achievement in a Second Language," *TESOL Quarterly* (1989), 23(3), pp. 509-530.

Cummins, J. *Schooling and Language Minority Students: A Theoretical Framework* (Los Angles, Calif.: California State University: Evaluation, Dissemination and Assessment Center, 1981).

Gonzales, Frank and E. Buckley. *Teaching Content ESL Strategies for Classroom Teachers* (San Antonio, Texas: Intercultural Development Research Association – Desegregation Assistance Center-South Central Collaborative, 1994).

Kagan, S. *Cooperative Learning Resources for Teachers* (San Juan Capistrano, Calif.: Resources for Teachers, Inc., 1990).

Lambert, W. and G.R. Tucker. *Bilingual Education of Children* (Rowley, Mass.: Newbury House, 1972).

Lee, V.W. "Low-Literacy Immigrant Students Pose New Challenges," *New Voices: A Newsletter from the National Center for Immigrant Students* (Boston, Mass.: National Coalition of Advocates for Students, 1993).

Swartz, Wendy. "Teaching Limited-English-Proficient Students to Understand and Use Mathematics," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, June 1992) pp. 12-14.

Swartz, Wendy. "The Trials and Tribulations of Learning Science & Mathematics by At-Risk Students," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, April 1988) pp. 10-12.

Short, D.J. *Intergrating Language and Content Instruction: Strategies and Techniques* (Washington, D.C.: National Clearinghouse for Bilingual Education, 1991).

Stutman, F.X. and A.C. Guzman. "Teaching Science Effectively to Limited English Proficient Students," Eric Clearinghouse on Urban Education Digest (New York, N.Y.: Teachers College Columbia University, March 1993), 87.

Dr. Frank Gonzales is a Senior Education Associate in the IDRA Division of Professional Development.

UPCOMING EVENTS

Fifth Annual Coca-Cola Valued Youth National Training Seminar and Valued Youth Conference
April 20-22, 1995
San Antonio Airport Hilton
San Antonio, Texas

For more information, contact: Linda Cantú at 210/684-8180.

Also in April!

La Semana del Niño:
The Week of The Child Conference
April 24-26, 1995
Holiday Inn Northwest
San Antonio, Texas

For more information see Page 16 or contact: Abraham Dominguez at 210/684-8180

REFLECTIONS

Dr. José A. Cárdenas

THE SHAPE OF THE WORLD

The following was written by Dr. José A. Cárdenas and is included in his new book, ***All Pianos Have Keys and Other Stories.***

I can't remember making a decision to go to college. Throughout my early life it was just something that everybody took for granted. My paternal grandfather had been a lawyer and newspaper publisher in Mexico prior to being exiled to the United States for his criticism of President Porfirio Díaz' dictatorial government. My maternal grandfather was a graduate of the Colegio Civil in Monterrey, Mexico. He came to the United States during the early twentieth century, realizing that revolutionary Mexico was no place for a man with a wife and five young daughters.

Family tradition has a strong impact on educational ambition. My father wanted me to be a lawyer and/or a newspaperman like his father; my mother wanted me to follow my oldest brother into medical school.

For my part, I wasn't sure what I wanted. When I enrolled in the University of Texas at the tender age of 15, I wanted to study journalism, law and medicine, but I also wanted to major in science and literature. It wasn't until my senior year after having taught some adult literacy classes and the enactment of the Texas Gilmer-Aiken legislation which provided beginning teachers with an unbelievable high beginning salary of $2,405 a year, that I decided to become a teacher.

During my senior year at Martin High School in Laredo, my father was transferred by the Missouri Pacific Railroad to Monterrey, Mexico. My mother joined him in Monterrey at the end of the school year when my brother and I graduated from high school. My parents were very supportive of my higher education schooling, but, unfortunately, they were equally supportive of my oldest brother in medical school, my other brother at Texas A&M and my sister enrolled as a boarder at Ursuline Academy in Laredo, where she would have the opportunity to graduate from an American school prior to enrollment at Texas Women's University in Denton.

Every month, my father would send me whatever financial assistance he could, although what he sent me could not even take care of my room and board, let alone tuition, textbooks, clothing and other college expenses. I therefore had to earn the major portion of the cost of my college education. Though I had a multiplicity of part-time jobs, my main source of income during my freshman year came from working at Renfro's Drug Store at a pay rate of 50¢ an hour. Most of my sophomore year I worked as an apprentice carpenter in the building of student housing. My junior and senior years were mostly financed by translating into Spanish scripts for a radio station operated by The University of Texas. During all four years at the university, I picked up some extra money waiting on tables in some of the luxurious fraternities and sororities, as well as tutoring other students in various subjects, but especially in Spanish.

I mention all of this because I want to emphasize my feelings upon graduation with a teaching certificate and the prospect of getting a job which paid the unbelievable sum of $2,405 a year. I didn't attend the graduation ceremonies. That same day, I was taken to the Scott-White clinic in Temple, Texas, where I was paid $10 for a pint of blood. With this money, I shipped all of my belongings to Laredo and hitch-hiked home to look for a job.

The year of my graduation was 1950. The baby boomers of the post World War II years were too young to be enrolled in school, and the low birth rates during the depression and the war, and the discharge of military service men and women had created a surplus of teachers.

As soon as I arrived in Laredo, I submitted an application to the Laredo Public Schools and waited for a call. They had no vacancies, and it started to look as if my dream job would never materialize. On the last day before the start of the 1950-51 school year, I received a call from the personnel office informing me of an opening teaching science at L.J. Christen Jr. High. I was scheduled to meet with the county sheriff, who was also president of the school board.

South Texas communities sometimes have very strong political leaders heading very strong political groups. One such political boss was George Parr of Duval County, commonly referred to as the Duke of Duval. Another such political powerhouse was my interviewer in Laredo, who doubled up as president of the school board and County Sheriff.

When I arrived for my interview, I was disappointed to find four other applicants for the same position waiting to be interviewed. I took a seat among them, most of whom I had met before; some of them even close friends.

One of the applicants was called in, spent a few minutes in the sheriff's office. He came out, muttered something about, "... stupid questions...," picked up his things and walked out.

In turn, each of the other applicants was called in, came out confused or angry, made reference to "stupid questions," and left the office.

I was the last to be called in. I greeted the sheriff, conveyed greetings from my father, and was asked to sit down for my interview.

The Shape *- continued on page 15*

One constant element in student achievement is parental involvement. Research and analysis of the past 15 years conclusively demonstrate that when parents are involved in their children's education, children do better in school, and the schools do better, too. IDRA believes that parents are intelligent and want the best education for their children. Parents of all socio-economic levels and all cultural groups can participate meaningfully in their children's schools. They can act as a driving force for innovations that improve the education of their children. IDRA helps parents and schools examine ways in which they can make a difference in their students' academic success.

WHAT PARENTS CAN DO FOR THEIR CHILDREN'S MATHEMATICS LEARNING

Ninta Adame-Reyna, M.A.

Most parents know that if they take their children to the library on a weekly basis and consistently read to them aloud, their children will acquire an interest in reading. Much has been written about the role of parents in instilling a love for reading in their children.

However, what do parents know about how to help their children acquire a "love" for mathematics? Is there a library they can take their children to where they will learn to like math? What do parents remember about their own experiences as they learned math? Were these pleasant or unpleasant experiences? And how do these past experiences impact how parents feel when their children ask for help with their math homework?

Just as parents' attitudes toward mathematics have an impact on helping their children with math homework, their attitudes also impact how children acquire mathematics skills. Nancy Kober, in her book, *What We Know About Mathematics Teaching and Learning*, states that attitudes and beliefs are powerful forces that work beneath the surface to enhance or undermine students' math performance (1991). Students who like math and consider themselves competent at it are more likely to achieve highly in math and participate in advanced math courses. Students who dislike or "fear" math or doubt their own competence in the area are likely to achieve below their capabilities.

Children's early beliefs and attitudes about mathematics are forged in the home. Parent attitudes toward mathematics are reasonable predictors of children's math achievement at all grade levels. Parents affect students' math achievement through the values they communicate about education, effort, long-term rewards of hard work and persistence, and personal responsibility. Parents who let their children know that success in math comes from effort are more likely to have children who do well in math and have positive feelings about it. On the other hand, negative parent attitudes about math can color children's perceptions and ultimately, their achievement (Kober, 1991).

How often have our children heard their parents make comments such as "I'll never be able to balance my checkbook," or "I am just horrible at handling finances"? Parents who had negative educational experiences in mathematics themselves can pass along their fears to their children. However, there are certain things that parents can do, regardless of their own experiences and education levels. The "Tips for Parents" on the next page can be photocopied from this newsletter. Distribute them to the parents of your students or hand them out at a parent meeting and use them for discussion.

We may ask ourselves if achievement increases when parents help their children with mathematics homework. One study concluded that when parents monitor homework, and complete more assignments, students have higher test scores and have higher math grades (Kober, 1991). This resulted because the children had a better attitude toward mathematics. However, the study also concluded that parent involvement alone was not enough. Teacher feedback on the homework was essential.

In cases where parents lack the skills or the time to help their children with homework, schools and community groups sometimes sponsor homework hotlines, tutoring, parent workshops and family math programs. One final warning: parents should never use math homework as punishment!

As our society becomes more complex, the need for our children to become more competent in mathematics has grown. Businesses want capable people with broad, transferable knowledge who can learn quickly on the job, master new technologies and adapt to career changes. They are demanding higher order, problem solving skills that cut across disciplines.

But this is not just important for society as a whole, it is vital for children themselves. As they become more competent in mathematics, their achievement in school will show more promise, they will have better career choices, and their level of self-esteem will be strengthened.

To prepare our children to cope with the technological, information-based society of the 21st century, schools will have to raise the level of education in general and mathematics instruction in particular. But, the school and the teacher cannot do it all alone. Virtually *everyone* will need to get involved - the home, community, school, teacher and the parents.

Resources

Barquet, Norma. "Parent Involvement in American Education," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, January 1993) pp. 6-8.

Gonzales, Frank. "Schools *Can* Involve Hispanic Parents," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, February 1992) pp. 2-5.

Katz, Lucinda et al. *Your Child and Math*, U.S. Department of Health and Human Resources (1981).

Kober, Nancy. *What We Know About Mathematics Teaching and Learning*, Office of Educational Research and Improvement, U.S. Department of Education (1991).

Lester, Mary. *Tips for Parents and Volunteers*. A publication of the Instructional Services Department, The Dallas Independent School District (1977).

Robledo Montecel, Maria, et al. *Hispanic Families As Valued Partners: An Educator's Guide*. (San Antonio, Texas: Intercultural Development Research Association, 1993).

Stenmark, Jean K. et al. *Matematica Para La Familia* (Berkley, Calif.: Regents, University of California, 1987).

Ninta Adame-Reyna is an Education Associate in the IDRA Division of Professional Development.

Tips for Parents

What You Can Do for Your Child's Mathematics Learning

1. **Let your child know that he or she can succeed in mathematics.** Talk to him or her about the relevance of math to future jobs and education; make clear that studying math has a long-term payoff. Set high expectations and get them the assistance necessary to achieve these expectations.

2. **Prepare yourself and listen for questions your child may ask about mathematics.** Although you may not be to sure how to solve the problem, by listening to your child review the problem step-by-step, together you can work toward the solution.

3. **Be more interested in the process involved in obtaining the answer rather than in the answer itself.** The final answer to a problem may sometimes be less important than learning *how* to arrive at an answer correctly. Many of the tests that are given to children focus more on the process versus the answer.

4. **Be careful not to tell your child the answer to a problem instead of assisting them in arriving at the solution themselves.** Once you have reviewed with your child the process for solving a problem, it is better to allow the child to arrive at the solution by asking relevant questions about the problem versus just giving the answer to the problem. It may be easier for the parent to give the answer, but this does not assist the child in increasing their math skills.

5. **Give your child opportunities to estimate what the answer will be whenever possible.** Estimation assists your child in thinking about the problem before solving the problem and is a skill that transfers to other areas.

6. **Provide a "special math place."** A "special math place" allows your child to adapt to his or her own style of learning. Some children learn better while lying on the floor or bed or with music playing in the background. There are no fixed rules on where a child does math homework.

7. **Look for ways to support your child's teacher and the school in a positive manner.** Join parents' groups and attend activities that your child's school has to offer. Volunteer to help find materials or math experts that can serve as good models for your child and are willing to volunteer at your child's school.

8. **Ask the teacher for an outline of his or her mathematics expectations.** Ask your child's teacher to give you an outline or the objectives he or she may have in mathematics for the year. This should be done as early in the year as possible.

9. **Take time to visit your child's classroom during math time.** The more you know about how your child is expected to do math in school, the better equipped you will be to assist him or her at home.

10. **Ask your child's teacher for ideas and suggestions you can use to help your child with mathematics at home.** Teachers are always willing to assist parents with ideas and materials that can be used in the home. Remember, the more you can assist in the home the easier his or her job will be in the classroom.

11. **Use errors your child may make in mathematics as another way to teach mathematics.** Children need reassurance that errors are a part of learning. Parents as teachers can increase positive attitudes by praising success and pointing out examples of sound reasoning and partially correct answers, instead of just marking problems right or wrong. Discussing why answers are right or wrong is a vital part of feedback, for even incorrect answers can exhibit good logic.

12. **Do not make your math time a routine – have fun with mathematics.** Try to include mathematics activities in all family situations. Talking about math during dinner, in the car or at the grocery store allows your child to see mathematics in a different way from how it is presented in a classroom setting. Discussing mathematics during routine family situations allows your child to begin to perceive math as a life-long skill.

IDRA Newsletter, Intercultural Development Research Association, February 1995.

Playtime Is Science Expands in Region VI

Bradley Scott, M.A.

The IDRA Desegregation Assistance Center - South Central Collaborative has been working with Educational Equity Concepts (EEC) to implement the *Playtime Is Science* curriculum in Region VI, which includes Arkansas, Louisiana, New Mexico, Oklahoma and Texas. EEC is a national nonprofit organization. Founded in 1982, it creates programs and materials that help educators provide bias-free learning environments and activities. *Playtime Is Science* was created to help give all children – regardless of race, ethnicity, sex, disability or income level – equal access to the study of science. The program's motto is that science is for everyone – not just a privileged few!

Playtime Is Science revolves around a series of simple, fun hands-on activities that parents and children can do together in the classroom or the home. It stresses that parents know more science based on their own life experience than they realize, and they can play an important role in getting children excited about science. They need only encourage their children to question, wonder and experiment – in short, to start *thinking* like scientists.

Targeting A Need

Right now, the demand for this kind of program is particularly pressing. The National Science Foundation has estimated that by the year 2010, the United States will have nearly a 1 million-person shortage of trained scientists and technicians. That is not surprising when you consider that girls, children of color, children from low-income families and those with disabilities are the least likely to receive basic education in science subjects. These youngsters represent a vast pool of talent, which we cannot afford to leave untapped.

Testing the Model

Based on the success of the local New York City model, *Playtime Is Science* has gone national. A three-year pilot is now in place at sites in Kansas City, Missouri; Lansing, Michigan; Detroit, Michigan; Tahlequah, Oklahoma (the Cherokee Nation); Ballston Spa, New York; and Schenectady, New York.

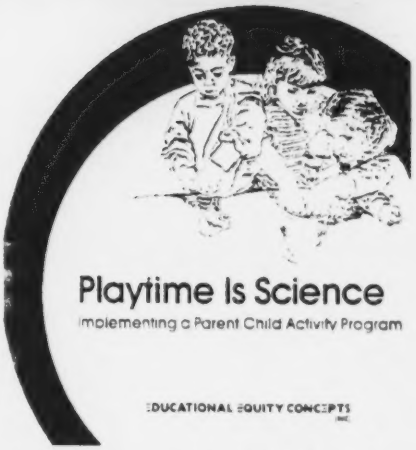
Also being piloted is a unique national training and implementation network that is being set up in partnership with four federally-funded regional Desegregation Assistance Centers (DACs). The objectives for the program are: 1) to pilot test *Playtime Is Science* in schools and community-based organizations at each of the four pilot sites; 2) to develop and field test print materials and video tapes, building on those developed for the local model; 3) to conduct research on outcomes for children; 4) to create regional training and implementation networks; and 5) to disseminate the program nationally.

IDRA DAC-SCC has introduced *Playtime Is Science* to three sites in Texas, Oklahoma and Arkansas. IDRA personnel have conducted the *Playtime Is Science* activities in Spanish for limited-English-proficient (LEP) parents throughout the region. Through IDRA's Division of Professional Development, staff members have also been successful in using the *Playtime Is Science* materials as a way of teaching English as a second language strategies for teachers of LEP children in public schools.

I recently conducted end-of-year interviews at the early childhood program of the Pulaski County special school district, in Little Rock, Arkansas. Staff reports showed how well the curriculum was received. It was IDRA's intent to implement the curriculum in one of the nine early childhood classrooms, but the teachers became so excited about it that all nine of them implemented the curriculum.

During my visit to Tallequah, Oklahoma, I also participated in the end-of-year activities for the Cherokee Nation Head Start, which serves 560 children and has 22 centers and 10 home-based locations. This site is one of the four research sites in the country for *Playtime Is Science*, so the progress of the project there will be observed closely. So far, staff members have noted that parent involvement has increased as a result of the project. IDRA is providing support services to help staff members implement *Playtime Is Science*. Some strategies that have worked include holding parent meetings in the evenings, holding these meetings (call "get togethers") for as long as parents want to stay, and providing transportation for this rural population.

The Harlandale school district site in San Antonio, Texas, had strong first-year implementation. The site successfully implemented the curriculum and held one Super Science Saturday. This event involves a three-and-a-half-hour mini-marathon of science activities for whole families. IDRA's site liaison was able to participate in various activities with the site and to provide technical assistance to them during the course of their implementation.



Expanding the Program

The program is being expanded to add two new sites at the José A. Cárdenas Early Child Center in the Edgewood school district, San Antonio, Texas, and at Jefferson Parish, Louisiana. IDRA is excited about both of the sites because of their uniqueness. The José Cárdenas Center provides preschool learning experiences for physically, emotionally and mentally challenged children and their families. It should prove to be an excellent opportunity for examining the ways in which these hands-on science experiences can be extended to special populations. The Jefferson Parish site is unique in that it provides a preschool multilingual setting where *Playtime Is Science* implementation can be observed.

Both sites will add the identification of ways in which the curriculum helps to make beginning science accessible to all children and parents regardless of race, gender, national origin, economic level or handicapping condition.

Bradley Scott is a Senior Education Associate in the IDRA Division of Professional Development.

For more information on Playtime Is Science *contact Bradley Scott at IDRA, 210/684-8180.*

MIJA - continued from page 6

half (56.3%) of the MIJA girls who took the TAAS passed it. In one of the classes, over 70 percent of the group passed the TAAS.

Increasing Awareness of Math-Related Careers

Goal 2: To increase Hispanic girls' awareness of math-related careers and provide them with an opportunity for making preliminary career decisions. The program specifically chooses girls who show a low interest in math courses and related careers. During the past year, the participants were exposed to 18 guest speakers from math- and science-related careers. In all cases, the participants had the opportunity to ask questions of all the role models. The majority of the speakers were women and/or people of color. IDRA's annual A.I.M. (Aspirations In Mathematics) Conference brought many professionals whom the students listened to and evaluated at the end of the conference. The students who attended showed an increase of awareness to the careers represented. The table below indicates the increased participant awareness of math-related careers.

Training Teachers

Goal 3: To provide training and technical assistance to school personnel on gender equity and school achievement issues. Early in the year, the MIJA teachers were introduced to hands-on strategies to increase math comprehension, reasoning, problem solving and retention for their students. Special workshops were also held for teachers during the Expanding Your Horizon's Conference, sponsored by the University of Texas at San Antonio and by the Alliance for Education. Topics discussed included the innovative hands-on science curriculum, *Playtime Is Science* (see story on Page 13), and a workshop to help guide their students in acquiring information and money for college.

During the MIJA Summer Math Institute, sponsered by IDRA, the MIJA teachers were trained to teach the early hands-on algebra curriculum, *Hands On Equations*, which is currently being implemented with the girls. The teachers were also shown a video on gender bias in the classroom with an emphasis on student/teacher interactions called, "Shortchanging Girls, Shortchanging America," created by the American Association of University Women.

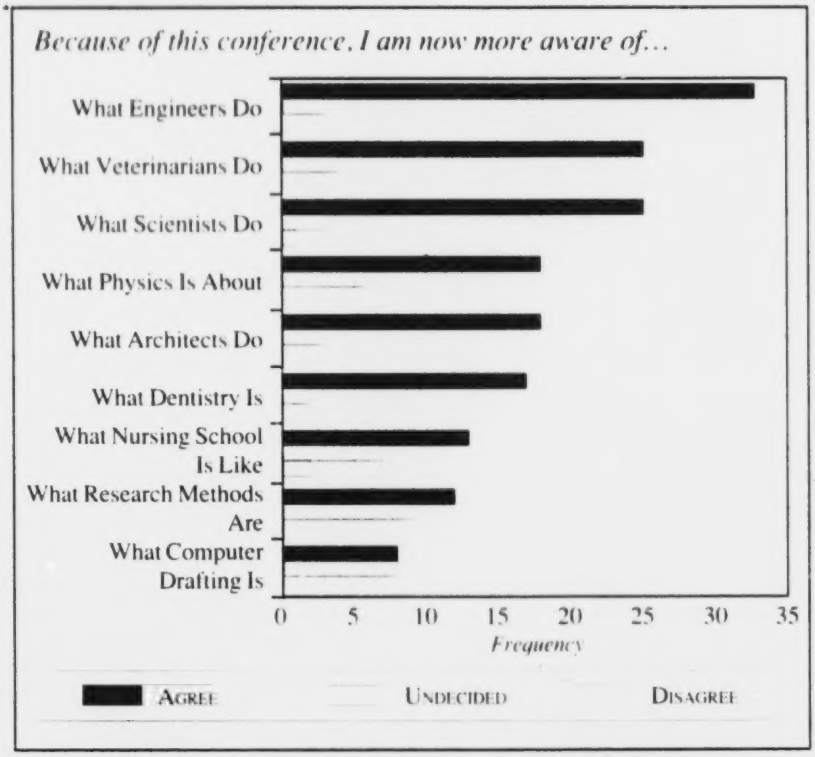
Enhancing Parental Support

Goal 4: To develop the competencies of parents of Hispanic girls in providing academically related encouragement and support. The parents of the MIJA participants also gave the program a high rating. The first parent sessions focussed on informing the parents about the family characteristics that can help support their children. They examined communication techniques and action ideas they can use to give positive messages of encouragement to support their daughter's school achievement. Since many of the participating parents do not speak English, all of their sessions were also offered in Spanish.

The parents attended two "family math" sessions given by staff and consultants of IDRA. The parents who were present at the Expanding Your Horizon's Conference, along with the teachers, learned some of the *Playtime Is Science* activities and attended a workshop entitled, "How to Go to College for Free." In one conference, 91 percent of the parents in attendance reported the activities to be helpful not only to them but for other parents in their communities. Of all the parents, 83 percent were moved by the program to try new ideas and activities with their daughters after participating in the MIJA sessions.

Clearly, MIJA has changed these girls' relationships with mathematics and, in the process, has probably profoundly changed their lives as well. This innovative program is demonstrating that MSEB's goals for mathematics education are attainable and are valuable for students.

AIM Conference Global Evaluation



Source: MIJA Evaluation Report - Year 2 - 1993-1994, Intercultural Development Research Association, November 1994.

Resources

Bass, Hyman. "Let's Measure What's Worth Measuring," *Education Week* (October 27, 1993).

DeLuna, Anna. "Project MIJA: Breaking Boundaries for Young Latinas," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, October 1993), 20(9), pp. 4-5.

Intercultural Development Research Association. *Math Increases Job Aspirations, Evaluation Report - Year 2 - 1993-1994*. Compiled by Dr. Felix Montes (San Antonio, Texas: IDRA, 1994).

Sosa, Alicia, and Yolanda García. "MIJA - Aiming for Higher Ground," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, September 1992), 19(8), pp. 7-12.

Anna DeLuna is an Education Assistant in IDRA's Division of Professional Development. Dr. Felix Montes is a Research Associate in IDRA's Division of Research and Evaluation.

For more information on the MIJA program, contact Dr. Alicia Salinas Sosa at IDRA, 210/684-8180.

Spotlight on Technology

Appropriate uses of technology give us a new opportunity to provide excellent education for *all* children. With this opportunity, the learning process can be transformed so that students truly are the center of the learning process. Student needs, characteristics and cultural diversities can then become part of that center; classrooms can be places to learn, more than places to teach. Technology can also transform the way schools operate. Student progress can be assessed in new ways. Schools and families can communicate with each other more effectively. Programs can be evaluated quickly and accurately. IDRA is helping teachers and administrators design ways of utilizing emerging technology to make schools work for *all* children.

Technology Uses for Math and Science Learning

Felix Montes, Ph.D.

Technology, mathematics and science are everywhere. Using one to learn about the others is fun, easy and enlightening. Below are some ideas for using technology to learn about math and science in the classroom. This list is organized from the most common technological tools (television and VCR) to the more sophisticated ones (Internet).

Non-Computer Activities

The television and VCR are great, sub-utilized technology resources. Some of the educational channels (PBS, Discover) offer a wide variety of science and technology programs (*The Secret Life of Machines*, *Computer Chronicles*, *Wild America*, etc.) that can be the base for some school projects. There are also many science and nature tapes available in the school library and in video stores that can serve this purpose.

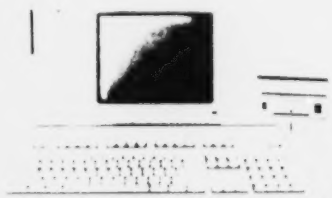
For example, a project about the use of static electricity could be based on manual experimentation with statically charged objects, actual observation of a photocopy machine and watching a program on the functioning of the photocopy machine in the *Secret Life of Machines* (PBS). Students will learn some abstract scientific concepts and experience their practical applications. They will also be able to relate this learning with everyday life objects, such as photocopies, refrigerators and computers.

Non-Multimedia Computers

Non-multimedia computers do not have CD-ROMs, sound board cards or speakers. They are the regular computers that most schools have. Math activities can be developed using a spreadsheet program (Lotus, Excell, etc.). Students can study the relationships between two or more variables that can be the result of their observations of certain phenomena. The spreadsheet software also allows them to graph these relationships. For example, a team can monitor in the daily newspaper the value of certain stocks and, using the spreadsheet program, show graphically their gains and losses. They can also predict their future values and show, through a bar chart, the differences between the predicted and the actual values.

Multimedia Computers

If your computer has a CD-ROM driver, you have the basic component for multimedia. The number of CD-ROM products that are suitable for educational uses is fast increasing. Of the most promising products are the illustrated encyclopedias (*Encarta* is one example). These products



compress more than 20-volume encyclopedias into one easy-to-handle compact disk. In addition, they add animation and audio explanations to examples. The product allows users to perform a variety of searches, and copy-and-paste textual and graphical information into the user's report. Different teams can research a topic using this resource and generate very different reports.

Internet Connections

If you have a computer and a modem and have access to a phone line, you have the basic requirements to access the Internet. The additional requirements are software that can establish the connection and an Internet account. Some vendors, such as America On-line, CompuServe, etc., offer both. Your local library might have access to Internet also.

Here is a summary of an ERIC Digest [EDO-IR-94-3] (1994), which presents a succinct introduction to Internet resources for educators. The Internet allows:

- Access to hundreds of lesson plans for mathematics and science, and also for language arts and social studies (Through: gopher una.hh.lib.umich.edu).
- Access to communication projects that can be used in the classroom (Through: gopher gopher.cic.net 3005).
- Access to national and international libraries, for example, to access the Library of Congress Marvel (Through: gopher marvel.loc.gov).
- Access to national and international agencies. For example, NASA Spacelink informs about the space shuttle program and science curriculum activities (Through: telnet spacelink.msfc.nasa.gov login: newuser password: newuser).

Resources

Morgan, Nancy A. An introduction to Internet resources for K-12 educators, Part I: Information Resources. ERIC Digest: ERIC Clearinghouse on Information & Technology (1994).

Felix Montes is a Research Associate in the IDRA Division of Research and Evaluation.

The Shape *- continued from page 10*

"I have only one question for you," he stated. "You want to teach science in our schools. Do you teach that the world is flat, or do you teach that the world is round?"

Just then I realized that the job was mine. I had heard the question before. I understood it, and I knew the answer the political boss of Laredo wanted to hear.

"Sheriff, I can teach it either way."

That same day I walked off the streets of Laredo and started my educational career.

Dr. José A. Cárdenas is Director Emeritus and Founder of IDRA.

*For information on how to order **All Pianos Have Keys and Other Stories** ($12.70) by Dr. José A. Cárdenas contact IDRA at 210/684-8180.*

La Semana del Niño/The Week of the Young Child

Educators' Institute to be Held April 24-26, 1995

The IDRA *La Semana del Niño* Institute, planned for April 24-26 in San Antonio, Texas, will bring together educators and administrators to celebrate the International Week of the Young Child through special sessions on bilingual early childhood education methods and practices. Topics will include: portfolios for young children, mixed-age grouping, two-way language programs, developmentally appropriate programs, Spanish transitions for young children, and emergent literacy curriculum. The event will also include site visits to various early childhood programs. All personnel involved in bilingual early childhood are invited to attend.

Comments from Last Year's Event:

"This will really be a big help to me!"

"Very informative and motivating for teachers in early childhood education."

"All principals should hear this information."

"I got lots of ideas I will be using as soon as I get back."

"...very much inspired me which in turn will benefit the child!"

Registration

Registrations for *La Semana del Niño* Institute will be accepted through April 1, 1995. The fee per participant is $50. Complete the form at right and send with a check or purchase order to the address below. For further information about the institute or IDRA's involvement in early childhood education, contact Abraham Dominguez at 210/684-8180.

Accommodations

The event will be held at the Holiday Inn Northwest on Loop 410 in San Antonio, Texas. A special room rate has been established for participants. For more information and to make reservations, call the Holiday Inn Northwest at 210/377-3900. Be sure to identify yourself as part of *La Semana del Niño* Institute. The hotel reservation deadline for the reduced rate is April 1, 1995. (Sorry, IDRA cannot make hotel reservations; all arrangements are the responsibility of the individual participant.)

Institute Sponsors

The *Intercultural Development Research Association* (IDRA) is pleased to bring you the second annual *La Semana del Niño* Institute through the *Multifunctional Resource Center - Service Area 9*, the *Desegregation Assistance Center - South Central Collaborative*, the *Evaluation Assistance Center - East*, and *Project Adelante*. Each of these IDRA projects provides specialized training and technical assistance to Texas public schools. Information on how your campus can use these resources to improve instruction and assessment will be available at the institute or may be obtained by calling IDRA at 210/684-8180.

Registration Form

❑ **Yes, I will attend *La Semana del Niño* Institute** on April 24-26, 1995 in San Antonio, Texas. I have enclosed a $50 check or purchase order per participant. *(Note: Fee is waived for Project Adelante participants.)*

❑ No, I cannot attend *La Semana del Niño* Institute.
Please contact me with more information about IDRA's early childhood education project involvement and professional development services.

Name _____

Organization _____

Address _____ **Zip** _____

Telephone _____

Fax Number _____

❑ Yes, I want to visit a school site on Wednesday afternoon.

❑ No, I do not want to visit a school site on Wednesday afternoon.

Additional Participants

Name _____

Organization _____

Address _____ Zip _____

Telephone _____

Fax Number _____

❑ Yes, I want to visit a school site on Wednesday afternoon.

❑ No, I do not want to visit a school site on Wednesday afternoon.

Name _____

Organization _____

Address _____ Zip _____

Telephone _____

Fax Number _____

❑ Yes, I want to visit a school site on Wednesday afternoon.

❑ No, I do not want to visit a school site on Wednesday afternoon.

To register: Complete this form and send with check or purchase order ($50 per participant) to *La Semana del Niño* Institute, Intercultural Development Research Association, 5835 Callaghan Road, Suite 350, San Antonio, Texas 78228. Fax 210/684-5389. For more information, contact Abraham Dominguez at IDRA (210/684-8180).

RESOURCES ON MATH AND SCIENCE

ADDITIONAL READINGS AND INFORMATION

MATH CLASS SHOULD BE MORE THAN JUST NUMBERS AND COMPUTATION. OUR JOB IS TO TURN OUR STUDENTS INTO THINKERS.

- Kay Toliver, teacher. Quoted in* Parade Magazine, *October 16, 1994

American Association for the Advancement of Science. *Benchmarks for Science Literacy: Project 2061* (New York: Oxford University Press, 1993).

Bosch, Karen A. and Rebecca S. Bowers. "'Count Me In, Too': Math Instructional Strategies for the Discouraged Learner." *The Clearing House* (November/December 1992), 66, pp. 104-106.

Burns, Marilyn. *About Teaching Mathematics: A K-8 Resource* (Sausalito, Calif.: Marilyn Burns Education Associates, 1992).

De Luna, Anna. **"Invisible Girls: The Other Half of America's Dropout Problem,"** *IDRA Newsletter* (October 1994), pp. 11, 13.

Kennedy, Mary (ed.). *Teaching Academic Subjects to Diverse Learners* (N.Y.: Teachers College Press, 1991).

Kumar, David D. "Effective Instructional Strategies in Science Revisited." *American Secondary Education* (1993) 21, (3), pp. 9-14.

Padilla, Amado M., Fairchild, Halford H., and Concepción Valadez (eds.). *Bilingual Education: Issues and Strategies* (Newbury Park, Calif.: Sage Publications, 1990).

Rutherford, James F. and Andrew Ahlgren. *Science for All Americans: Scientific Literacy, What Is It? Why America Needs It, How We Can Achieve It* (N.Y.: Oxford University Press, 1990).

Salas, Conchi. **"Gender Equity in Math and Science Education,"** *IDRA Newsletter* (March 1994), p. 9.

Schwartz, Wendy. **"Teaching Limited-English-Proficient Students to Understand and Use Mathematics,"** *IDRA Newsletter* (June 1992), pp. 12-14.

Wilson, Jacqueline S. and James L. Milson. "Factors Which Contribute to Shaping Female's Attitudes Toward the Study of Science and Strategies Which May Attract Females to the Study of Science." *Journal of Instructional Psychology* (March 1993) 20, pp. 78-86.

Titles in bold are available from IDRA at no cost.
Contact IDRA's Communications Manager to obtain reprints. Thank you.

Dr. Alicia Salinas Sosa

DR. ALICIA SALINAS SOSA TABE HONOREE 1994-1995

Dr. Alicia Salinas Sosa was recently honored by the Texas Association for Bilingual Education (TABE) for her outstanding work in bilingual education. In recognizing her as a 1994-1995 TABE honoree at a conference luncheon in November, TABE noted her contribution to the field first through her involvement in TABE, the National Association for Bilingual Education (NABE) and the San Antonio Area Association for Bilingual Education, (SAABE).

Sosa, was also recognized for her work as a researcher, trainer, author, teacher and mentor. She began her career in 1971 as a teacher in her native Laredo, Texas. While a bilingual teacher at Edgewood school district in San Antonio, she also served as staff development coordinator. She has worked at IDRA since 1975 in various capacities – project manager, program director, division director. Here she has been instrumental in designing and delivering training, securing funding for innovative bilingual education projects, managing projects, supervising staff, researching, publishing and keynoting. She has also been involved in many community and education activities that positively impact bilingual students in the city of San Antonio and across the state. As a staff member of IDRA, her influence has stretched nationwide.

Sosa was especially recognized for countless hours she has spent being a resource and mentor to young professionals, parents and especially students. She has especially directed her efforts to empower them by providing access to information and resources in bilingual education.

Sosa received her Ph.D. from the University of Texas at Austin in curriculum and instruction with a specialization in teacher education and bilingual education. Sosa has authored numerous publications including, most recently, *Thorough and Fair: Creating Routes to Success for Mexican American Students* and *Questions and Answers about Bilingual Education.*

As TABE members, others too recognize her leadership and devotion to bilingual education. Congratulations, Dr. Sosa!

PUBLICATIONS AVAILABLE FROM IDRA

The following publications are available from IDRA at the listed price; there is no additional charge for shipping and handling. Publication orders should be directed to Communications Manager, IDRA, 5835 Callaghan Road, Suite 350, San Antonio, Texas 78228-1190. It is IDRA policy that all orders totaling less than $30 be pre-paid. Thank you.

NEW! MAGNET SCHOOLS: POCKETS OF EXCELLENCE IN A SEA OF DIVERSITY

by Bradley Scott, M.A. and Anna DeLuna

One of the only multi-district studies of magnet schools, *Magnet Schools: Pockets of Excellence in a Sea of Diversity* reports on 11 magnet school campuses in four school districts. It examines 12 important indicators of effectiveness in magnet schools that are used as a strategy for school desegregation: staffing, student selection and assignment, student selection and enrollment, student-teacher ratios, curriculum, magnet school image, physical environment, student outcomes, student support, race relations, parent and community involvement, and magnet and non-magnet school collaboration. *Pockets of Excellence* gives information about magnet schools and their ability to further the goals of desegregation. It also offers recommendations about effective strategies in the operation of magnet schools that may be adopted by non-magnet schools in desegregated settings as a part of their school improvement and restructuring efforts.

100 Pages; $25.00

November 1994 First Edition; Quality Paperback; ISBN#1-878550-54-3

QUESTIONS AND ANSWERS ABOUT BILINGUAL EDUCATION

by Alicia Salinas Sosa, Ph.D.

This popular booklet dispels many misconceptions of bilingual education by answering 23 essential questions on program, rationale, implementation and evaluation. English and Spanish versions are included in the same booklet.

32 Pages; $10.00

1993 First Edition; Quality Paperback; ISBN#1-878550-48-9

IDRA WORKSHOPS

To request further information on these or other training and technical assistance topics, please contact IDRA at 210/684-8180.

WORKSHOP FOR TEACHERS AND ADMINISTRATORS

Imparting Positive Expectations to Students in At-Risk Situations

Students in at-risk situations are especially susceptible to low self-esteem and low self-expectations. Because of this, teachers and administrators are encouraged to develop an awareness for identifying the different types of students in at-risk situations. Once the groundwork has been laid, educators can target these students by empowering them with the skills to raise their own self-expectations. This workshop, to last from three to six hours, will show participants how to instill these skills. Techniques to transfer, reinforce and integrate skills within a particular student will be shared.

WORKSHOPS FOR TEACHERS

Instructional Computing: Fulfilling the Promise in Bilingual Classrooms

This hands-on workshop is designed for creative teachers who strive to develop higher order thinking, oral language and literacy skills in their second language learners. The participants will learn effective ways to integrate instructional technology into their innovative language arts and content area classrooms. The *Reading/Writing/Computing Connection* will reveal ways to use electronic books, word processing, and desktop publishing software to extend the poems and stories enjoyed in whole language classrooms. *Content Area Connections* will demonstrate ways to use electronic encyclopedias and other databases for student research, simulation programs for the exploration of thought-provoking issues in social studies, and spreadsheets and graphic programs for math and science investigations. Both Macintosh and IBM/DOS applications will be demonstrated. Arrange for a workshop at your site or attend one that is already scheduled:

Feb. 28, 1995 · 8:30 - 3:30 · Dallas Mar. 28, 1995 · 8:30 - 3:30 · Houston

Pathways Math Strategies

This workshop offers a review of the TAAS test math-related objectives and instructional targets, including a review of how TAAS-like math questions should be formulated. It also provides test taking strategies and common mathematical errors. Training participants are grouped for activities that can later be used in the classroom. Arrange for a workshop at your site or attend one that is already scheduled:

Feb. 13, 1995 · 8:30 - 3:30 · Dallas Feb. 20, 1995 · 8:30 - 3:30 · Houston Feb. 27, 1995 · 8:30 - 3:30 · San Antonio

SCHEDULE OF IDRA TRAINING AND WORKSHOP ACTIVITIES

FEBRUARY 1 - FEBRUARY 28, 1995

This list includes activities that have been scheduled for particular school districts and other groups. They are not open to the public. For information on scheduling a similar event for your school district or other group, contact IDRA at 210/684-8180.

DATE	SCHOOL DISTRICT/AGENCY	TOPIC
Feb. 1-2	Illinois Resource Center	Alternative Assessment: Issues and Strategies
	Northside Independent School District (ISD)	Young Scientists Acquiring English
	Rio Grande ISD	Technical Assistance
Feb. 2	Denver, Colo.	International Reading Association – Weaving the Fabric of Literacy 1995
	Multifunctional Resource Center (MRC) Regional Workshop – Harlingen, Texas	Cooperative Learning Structures for the Paraprofessional in a Bilingual and English as a Second Language (ESL) Classroom
Feb. 3	MRC Regional Workshop – San Antonio, Texas	Designing Bilingual and ESL Programs that Address the New Title VII Regulations
Feb. 6	Edcouch-Elsa ISD	Developmentally Appropriate Practice in a Bilingual Preschool Program
	Kingsville ISD	Reading Strategies
Feb. 7	MRC Regional Workshop – Victoria, Texas	Integrating Active Learning Strategies to Enhance Second Language Acquisition at the Secondary Level
	Brownwood ISD	What Changes Have to be Made in My Classroom to Better Serve All My Students' Needs?
	Northside ISD	Young Scientists Acquiring English
Feb. 8	Harlandale ISD	Reading Strategies
	MRC Regional Workshop – San Antonio, Texas	Using Action Research in the Bilingual Education and ESL Classroom
	Texas Education Agency Equity Program Conference	Evaluation
Feb. 9	Louisiana State Education Agency (SEA)	Workshop on Workshops (WOW)
	MRC Regional Workshop – San Antonio, Texas	Using Action Research in the Bilingual Education and ESL Classroom
Feb. 9-10	Harlingen ISD	Literature Based Reading and TAAS Objectives
Feb. 10	Brownsville ISD	Valued Youth Program (VYP) – Mentor Meeting
	Louisiana SEA	WOW
	MRC Regional Workshop – Edinburg, Texas	Designing Bilingual and ESL Programs that Address the New Title VII Regulations
	San Antonio Literacy Council	Technical Assistance – *Project SALNET* (San Antonio Literacy Network)
Feb. 11	Brownsville ISD	VYP – Tutor and Mentor Meeting
	San Antonio ISD	Young Scientists Acquiring English – Whole Language Strategies Across the Curriculum
	Sharyland ISD	Cooperative Learning
Feb. 13-14	Sharyland ISD	Cooperative Learning
Feb. 15	Lasara ISD	Using Math Manipulatives in a Bilingual or ESL Classroom
	Santa Rosa ISD	ESL Techniques
Feb. 16	San Felipe del Rio ISD	What Parents Can Do to Support a Quality Instructional Program

SCHEDULE OF IDRA TRAINING AND WORKSHOP ACTIVITIES

FEBRUARY 1 - FEBRUARY 28, 1995

DATE	SCHOOL DISTRICT/AGENCY	TOPIC
Feb. 16	San Felipe del Rio ISD	Communicating Effectively With Our Children
Feb. 16-18	National Association for Bilingual Education (NABE)	*Dicho y Hecho:* Language Play and the Arts
Feb. 17	Houston ISD	Cooperative Learning
	Pharr-San Juan-Alamo ISD	Math Manipulatives and TAAS
Feb. 18	Brownsville ISD	VYP – Tutor and Mentor Meeting
Feb. 19	NABE	Teacher Induction – Bilingual Teachers
Feb. 20	Ector County ISD	TAAS Pathways Writing
Feb. 21	Ector County ISD	TAAS Pathways Reading
	MRC Regional Workshop – Corpus Christi, Texas	Creating Effective Learning Centers in Bilingual and ESL Classroom
Feb. 22	Rio Grande City Consolidated ISD (CISD)	Technical Assistance – Classroom Visits
	Sam Houston State University	Gender Equity Sexual Harassment
	San Antonio Literacy Council	Technical Assistance – *Project SALNET*
Feb. 23	Brownwood ISD	How Can Teaching Assistants Help Implement the Bilingual and ESL Programs?
	Dearborn, Ill.	Alternative Assessment
	MRC Regional Workshop – El Paso, Texas	Implementing Multidisciplinary, Interdisciplinary or Transdisciplinary Curriculum Models in a Bilingual Classroom
	Pomona, Calif.	VYP – Implementation Team Meeting
	San Antonio ISD	Young Scientists Acquiring English – Classroom Visits
Feb. 24	Edinburg ISD	VYP – Observations of Tutors
	Laredo Head Start	Supporting Teachers' Classroom Success
	MRC Regional Workshop – Laredo, Texas	Creating Effective Learning Centers in Bilingual and ESL Classroom
	Pomona, Calif.	VYP – Observations and Technical Assistance
	San Antonio Literacy Council	Technical Assistance – *Project SALNET*

INTERCULTURAL DEVELOPMENT RESEARCH ASSOCIATION
IDRA

5835 Callaghan Road, Suite 350
San Antonio, TX 78228-1190

Non-Profit Organization
U.S. POSTAGE PAID
Permit No. 3192
San Antonio, TX 78228

ACQUISITIONS
ERIC/CRESS
PO BOX 1348
CHARLESTON WV

25325